well, and Mr. Charles Jackson, Jr. made various inquiries; but the reason why some pipes were more acted upon than others was not elicited.

Dr. Gray exhibited specimens of a *Spongilla* taken from the Cochituate water-pipes, in which, at some places, especially where there is no rapid flow, this production is said to form with great rapidity.

Three hundred and ninety-fifth meeting.

February 28, 1854. — SEMI-MONTHLY MEETING.

The PRESIDENT in the chair.

The Corresponding Secretary acted as Recording Secretary, and read the record of the proceedings of the preceding meeting.

Professor Cooke submitted a memoir upon a subject which he had brought before the Academy at a former meeting, viz. "The Numerical Relation between the Atomic Weights, with some Thoughts on the Classification of the Chemical Elements." This was illustrated by a new classification of the elements in natural groups.

Dr. W. F. Channing stated that he had recently assisted in measuring the electricity evolved by two large magneto-electric machines constructed in Providence. These consisted essentially of armatures with inducing coils revolving before magnets. The amount of electricity evolved by the smaller machine was equal in quantity and intensity to that from a series of fifteen Grove's cups in full action. The amount of electricity evolved from the larger machine was equal to that from one hundred and forty-four Grove's cups, arranged two abreast in a series of seventy-two. The interesting fact here is, that galvanic electricity may be obtained from the magneto-electric machine for practical purposes, in greater quantity and at less cost than from the galvanic battery.

Professor Cooke communicated the fact, that an alloy of zinc, with a small quantity of antimony, after having been acted

upon by dilute sulphuric acid, and then washed free from acid and left in water, continued to evolve pure hydrogen for the space of two months, at the ordinary temperature of the air; in considerable quantities, at the temperature of 60° or 70° Fahr.; and in lesser quantity, but without interruption, at 32°. Professor Cooke conjectured that this was owing to the zinc being thrown from the passive to an active state by the action of the acid and of the antimony; but Dr. W. F. Channing attributed it to the galvanic action developed by the acid, in partly detaching the crystals or particles of the antimony from the zinc, so as to form galvanic circuits.

Three hundred and ninety-sixth meeting.

March 14, 1854. — SEMI-MONTHLY MEETING.

The PRESIDENT in the chair.

The Academy met at the house of George B. Emerson, Esq.

The Corresponding Secretary laid before the Academy a letter from Professor Peters, of Königsberg, acknowledging his election as Foreign Honorary Member of the Academy; a letter from the Museum of Practical Geology, London, acknowledging the reception of the New Series of the Academy's Memoirs to Vol. V. Part I., and Vols. I. and II. of the Proceedings; letters from the Royal Institution, the British Museum, the Linnæan Society, the Society of Antiquaries, and Chevalier Bunsen, acknowledging the reception of Vol. V. Part. I. of the Academy's Memoirs, and pp. 233 to 359 of Vol. II. of the Proceedings; and a letter from the Academy of Natural Sciences, Philadelphia, acknowledging the reception of Vol. V. Part I. of the Academy's Memoirs.

Professor Treadwell made a communication "On the Measure of Force." In the Newtonian theory, the measure of force is the mass multiplied by the velocity, or as the mo-